

REMARKS

Claims 1-62 and 68 are pending in the application. Claims 63-67 have been previously cancelled. Claims 1, 11, 22, 35, 45 and 57 have been amended by way of the present amendment. Reconsideration is respectfully requested.

In the outstanding Office Action, claims 1-5, 8-10, 22-28, 31-40, 43-44, 46-48, 50-54, 57-62 and 68 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over U.S. Patent No. 6,763,192 (Jagannathan); claims 11, 12, 14-16, 19-21 and 45 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Jagannathan in view of U.S. Patent No. 5,757,526 (Shiragaki et al.); claims 11-12 and 14-16 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0163693 (Robissa et al.); claims 13 and 19-21 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Robissa et al., as applied to claims 11-12 and 14-16 and further in view of Jagannathan or in the alternative Robissa et al. in view of Jagannathan; claims 6-7, 29-30, 41-42 and 55-56 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Jagannathan and further in view of U.S. Patent Publication No. 2002/0048066 (Antoniades et al.); and claims 17-18 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Robissa as applied to claims 11-12 in view of Antoniades et al.

35 U.S.C. Section 103 Rejections

Claims 1-5, 8-10, 22-28, 31-40, 43-48, 50-54, 57-62 and 68 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Jagannathan. Reconsideration is respectfully requested.

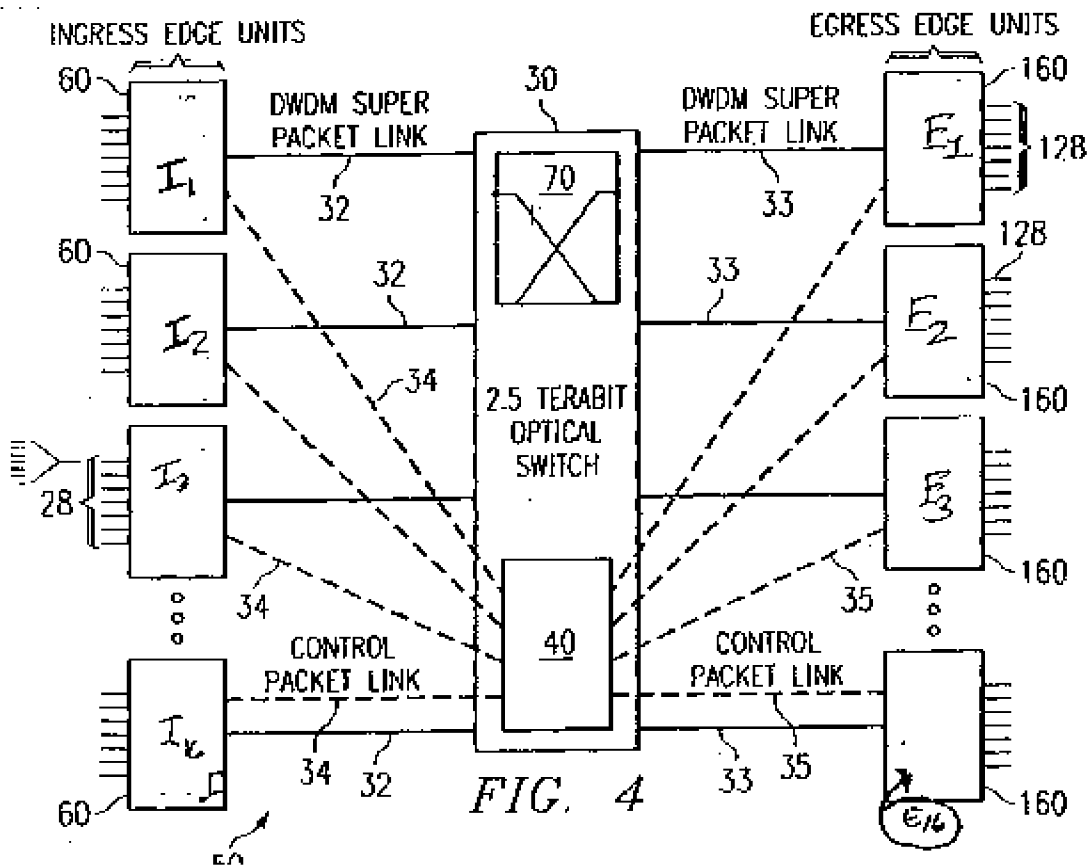
Independent claim 1 has been amended to clarify the invention. In particular, claim 1 has been amended to recite:

[A]n optical switch fabric, comprising:
at least one optical switching matrix comprising
a plurality of input links;

a plurality of output links, wherein each of the plurality of input links intersects with each of the plurality of output links;
a plurality of path switches with one path switch located at each intersection of an input link and an output link;
~~a switch core controller to ensure the capacity of the plurality of the output links is not exceeded; and~~
a plurality of ingress edge units linked to the core controller via the plurality of input links;
a plurality of egress edge units linked to the core controller via the plurality of output links;
a packet scheduler to receive and process a plurality of control packet data links; ~~and~~
a switch controller that coordinates switching based on information processed from the plurality of ingress edge units,
wherein each of the plurality of path switches is operable to communicate optical data from intersecting input link to an intersecting output link, and
wherein each of the plurality of path switches is configurable to close or open to create a plurality of unique paths in a given switching time interval for transporting the optical data through the optical switching matrix without contention or congestion.

Independent claims 11, 22, 35, 45 and 57 have been similarly amended. Support for the amendments is provided by the figures and text of the original application. In particular, **FIG. 4** shows and the specification discloses an embodiment of the optical core node or optical router **50** employing an embodiment of the optical switching architecture of the present invention. In addition, the **FIG. 4** and the specification disclose the optical router **50** includes an optical switch core **30**, that comprises an optical switch fabric **70** and a core controller **40** that manages the routing through the optical switch fabric **70**, *a plurality of ingress edge units 60* linked to the optical switch fabric **70** via a plurality of ingress super packet links **32** and *linked to the core controller 40 via a plurality of ingress control packet links 34*; and *a plurality of egress edge units 160* linked to the optical switch fabric **70** via a plurality of egress super packet links **33** and *linked to the core controller 40 via a plurality of egress control packet links 35* (emphasis added). That is, **FIG. 4** and the specification disclose that the switch controller **40** is interconnected to a plurality of edge units **60** and **160**.

In addition, as shown in **FIG. 5** and disclosed by the specification, the core controller **40** can comprise a super packet scheduler **42** (which is the portion of the core controller **40** that communicates with the ingress edge units **60** through the ingress control packet links **34** and with the egress edge units **160** through the egress control packet links **35**), and a switch controller **38** that is in communication between the packet scheduler **42** and the optical switch fabric **70** to coordinate the actual switching within the optical switch fabric **70** based on the information processed from the ingress edge units **60**. Therefore, in consideration of the above, it is respectfully submitted the amendments raise no questions of new matter.



Jagannathan discloses optical switching elements, such as a Semiconductor Optical Amplifier (SOA), that would be electrically controlled to switch in the nano-second response range; and a switching matrix, made of a number of SOAs and controlled by routing protocols and a resource management software or hardware, that will enable optical routers to act as a

synchronous or asynchronous and fixed or variable length packet switching apparatus.¹ In particular, as shown in **FIG. 5**, Jagannathan discloses a functional diagram for the optical packet switching apparatus **400** includes a network manager **505**, a resource management mechanism **405**, a port availability database **520**, an optical switch control mechanism **410**, and an optical switching matrix **525**.² Further, Jagannathan discloses that when the resource management

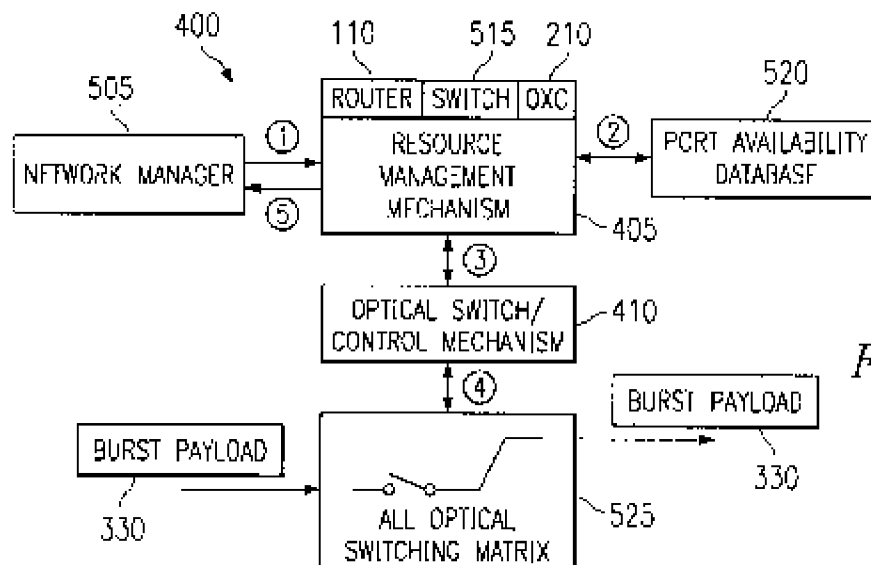


FIG. 5

mechanism **405** is functioning as a router, it transmits detailed mapping information to the switch control mechanism **410** on how to map an optical path from an input to an output port in the optical switching matrix **525** and that the mapping information also includes how long the optical path should remain open.³

However, Jagannathan nowhere discloses as independent claim 1 recited:

a core controller to ensure the capacity of the plurality of the output links is not exceeded;

¹ Jagannathan at column 1, lines 29-37.

² *Id.* at **FIG. 5** and column 4, lines 33-41.

³ *Id.* at **FIG. 5**, and column 4, lines 47-55.

a plurality of ingress edge units linked to the core controller via the plurality of input links;
a plurality of egress edge units linked to the core controller via the plurality of output links;
a packet scheduler to receive and process a plurality of control packet data links; and
a switch controller that coordinates switching based on information processed from the plurality of ingress edge units (emphasis added).

Independent claims 22, 35, 45, and 57 have been similarly amended. Therefore, it is respectfully submitted that Jagannathan does not disclose, suggest or make obvious the claimed invention and that claims 1, 22, 35, 45 and 57, and claims dependent thereon patentably distinguish thereover.

Claims 11, 12, 14-16, 19-21 and 45 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Jagannathan in view of Shiragaki et al. Reconsideration is respectfully requested.

As discussed above, the independent claims, including claims 11 and 45, have been amended to distinguish over Jagannathan. Thus, for at least for the same reasons discussed above, Jagannathan does not disclose the limitations of claim 11, 45 and claims dependent thereon.

In addition, the outstanding Office Action acknowledges other deficiencies of Jagannathan and attempts to overcome these deficiencies by combining Jagannathan with Shiragaki et al. However, Shiragaki et al. cannot overcome all of the deficiencies of Jagannathan, as will be discussed below.

Shiragaki et al. discloses an optical communication network for quickly detecting faults and rerouting data using the optical signals in their light form, superimposes a monitoring signal

on an optical data signal.⁴ However, Shiragaki et al. nowhere discloses as independent claims 11 and, in particular, 45 recites:

a core controller to ensure the capacity of the plurality of the output links is not exceeded,
a switch controller that coordinates switching based on information processed from the plurality of ingress edge units,
wherein the switch controller in communication with the packet scheduler operable to configure the optical switching matrix according to the schedule pattern,
wherein the plurality of ingress edge units are linked to the switch controller via the plurality of inputs, and the plurality of egress edge units are linked to the core controller via the plurality of outputs (emphasis added).

Claim 11 recites similar limitations. Thus, Shiragaki et al. cannot overcome all of the deficiencies of Jagannathan with respect to independent claims 11 and 45. Therefore, it is respectfully submitted that neither Jagannathan nor Shiragaki et al., whether taken alone or in combination, do not disclose, suggest or make obvious the claimed invention and that claims 11 and 45, and claims dependent thereon, patentably distinguish thereover.

Claims 11-12 and 14-16 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Rubissa et al. Reconsideration is respectfully requested.

Rubissa et al. discloses a method and system for switching and routing, while logically managing and controlling, multichannel optical signals in an optical communication system. However, Rubissa et al. nowhere discloses as independent claims 11 recites:

a core controller to ensure the capacity of the plurality of the output links is not exceeded;
a plurality of ingress edge units linked to the core controller via the plurality of inputs;
a plurality of egress edge units linked to the core controller via the plurality of outputs;

⁴ Shiragaki et al. at ABSTRACT.

a packet scheduler to receive and process a plurality of
control packet data links;
*a switch controller that coordinates switching based on
information processed from the plurality of ingress edge units
(emphasis added).*

Therefore, it is respectfully submitted that neither Rubissa et al. does not disclose, suggest or make obvious the claimed invention and that claims 11, and claims dependent thereon, patentably distinguish thereover.

Claims 13 and 19-21 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Jagannathan in view of Rubissa et al. or in the alternative Rubissa et al. as applied to claims 11-12 and 14-16 and further in view of Jagannathan. Reconsideration is respectfully requested.

Claims 13 and 19-21 are ultimately dependent upon claim 11. As discussed above, the independent claims, including claim 11, have been amended to distinguish over both Rubissa et al. and Jagannathan. Thus, for at least for the same reasons discussed above, neither Rubissa et al. nor Jagannathan disclose the claims 13 and 19-21. In addition, the outstanding Office Action acknowledges other deficiencies of Jagannathan and Rubissa et al. and attempts to overcome these deficiencies by combining Jagannathan with Rubissa et al. However, for the same reasons discussed above, neither Rubissa et al. nor Jagannathan, whether taken alone, in combination or in the alternative do not disclose the limitations of claims 13 and 19-21 and therefore, claims 13 and 19-21 patentably distinguish thereover.

Claims 6-7, 29-30, 41-42 and 55-56 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Jagannathan in view of Antoniades et al. Reconsideration is respectfully requested.

Claims 6-7, 29-30, 41-42 and 55-56 ultimately depend upon independent claims 1, 22, 35 and 45, respectively. As discussed above, the independent claims 1, 22, 35 and 45, have been amended to patentably distinguish over Jagannathan. Thus, for at least for the same reasons

discussed above, Jagannathan does not disclose the limitations of and claims 6-7, 29-30, 41-42 and 55-56 dependent thereon.

In addition, the outstanding Office Action acknowledges other deficiencies of Jagannathan and attempts to overcome these deficiencies by combining Jagannathan with Antoniades et al. However, Antoniades et al. cannot overcome all of the deficiencies of Jagannathan, as will be discussed below.

Antoniades et al. discloses a wavelength selective optical cross-connect includes a first demultiplexor feeding into individually removable modules that in turn feed a first multiplexor, such that the cross-connect is expandable and repairable on a wavelength or waveband basis.⁵ However, Antoniades et al. nowhere discloses as independent claim 1 recites:

a core controller to ensure the capacity of the plurality of the output links is not exceeded;
a plurality of ingress edge units linked to the core controller via the plurality of input links;
a plurality of egress edge units linked to the core controller via the plurality of output links;
a packet scheduler to receive and process a plurality of control packet data links; and
a switch controller that coordinates switching based on information processed from the plurality of ingress edge units
(emphasis added).

Independent claims 22, 35, 45, and 57 have been similarly amended. Thus, Antoniades et al. cannot overcome all of the deficiencies of Jagannathan. Therefore, it is respectfully submitted that neither Jagannathan nor Antoniades et al., whether taken alone or in combination, do not disclose, suggest or make obvious the claimed invention and that claims 1, 22, 35 and 45, and claims dependent thereon, patentably distinguish thereover.

⁵ Antoniades et al. at ABSTRACT.

Application No.: 10/659,485

Docket No.: 27592-00373-US1

Amendment dated: September 29, 2008

In reply to Office Action dated: May 29, 2008

Claims 17-18 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Rubissa et al. in view of Antoniades et al. Reconsideration is respectfully requested.

Claims 17-18 are ultimately dependent upon claim 11. As discussed above, neither Rubissa et al. nor Antoniades et al., whether taken alone or in combination, disclose the limitations of claim 11. Thus, at least for those reasons, neither Rubissa et al. nor Antoniades et al., whether taken alone or in combination disclose the limitation of claims 17-18, and that claims 17-18, patentably distinguish thereover.

Conclusion

In view of the above, consideration and allowance are respectfully solicited.

In the event the Examiner believes an interview might serve in any way to advance the prosecution of this application, the undersigned is available at the telephone number noted below.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 22-0185, under Order No. 27592-00373-US1 from which the undersigned is authorized to draw.

Dated: October 29, 2008

Respectfully submitted,

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